



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
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ATLANTA, GEORGIA 30303-8960

4WD-SSMB

MEMORANDUM

SUBJECT: Hipps Road Landfill Superfund Site
Five-Year Review

FROM: John Blanchard, RPM
South Site Management Branch

THRU: Curt Fehn, Chief
South Site Management Branch

TO: Richard D. Green, Director
Waste Management Division

Attached is the Five-Year review Report for the Hipps Road Landfill Superfund Site in Jacksonville, DuVal County, Florida. Section 121 (C) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, requires that if a remedial action is taken that results in any hazardous substances, pollutants, or contaminants remaining at the site, the Environmental Protection Agency (EPA) shall review the remedial action no less often than each five years after initiation of the remedial action to assure that human health and the environment are being protected by the remedial action being implemented. This is the second Five-Year Review conducted for this site.

The Hipps Road Landfill site is former 6.2-acre landfill located on a 12-Acre site. The landfill operated from the mid-1960's until 1970. The site was proposed for the National Priorities List (NPL) in September 1983 and was finalized on the NPL in September 1984. The Remedial Investigation and Feasibility study was completed in 1986 and showed that ground water was the media of concern. The contaminants of concern are vinyl chloride, benzene, and other volatile organic compounds. The Record of Decision (ROD) was signed in September 1986. Components of the ROD included:

- Proper landfill closure
- Recovery of contaminated ground water and disposal to a Publicly Owned Treatment Works (POTW)
- Long-term monitoring of ground water after treatment is completed
- Operation and Maintenance for all components of the remedy
- Institutional controls to include plugging and abandonment of impacted private wells; fencing the site; acquiring affected properties; and instituting a 20-year drilling ban.

The remedy was initiated in 1988 - five properties were acquired during that year; closure of the landfill was completed in April 1990. The EPA issued a ROD amendment in 1990 to construct an on-site holding pond and treat contaminated water via air stripping; the POTW is used for overflow only. All private wells in the area have been abandoned. The Preliminary Close Out Report was completed in September 1994.

We continued to operate the ground water pump and treat system and monitor the ground water. While the pump and treat system greatly reduced the contaminant concentrations initially, the contaminant levels have become asymptotic at levels slightly above the MCLs over the past several years. The effectiveness of continuing the pump and treat operation is in question. To enhance this system, and with concurrence from the Florida Department of Environmental Protection, we shut down the pump and treat system in September 1999 to conduct a monitored natural attenuation study. That study will be completed in September 2000. We have installed the necessary safeguards and maintain the ability to re-start the pump and treat system if contaminant levels increase. To date, the monitored natural attenuation data shows a decline in the contaminant levels. This demonstrates that the remedy remains protective and that monitored natural attenuation may be a viable option.

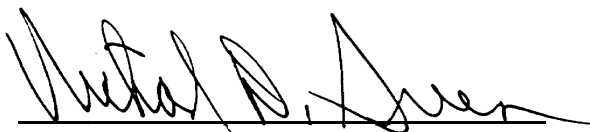
The first review was conducted in September 1995. That review indicated that the remedy remains protective of human health and the environment, complies with Federal and State ARARs, and is cost effective. During that review, the EPA collected samples from suspected erosion areas to evaluate the possibility of a release. The analytical data showed no hazardous or toxic substances were being released via the surface pathway. In addition, the ground water treatment and recovery system was operating properly. Site access was controlled and the fence was well-maintained. Recommendations from that five year review were to ensure the integrity of the landfill cover system, review the monitoring data to evaluate the progress of the remediation, and make the necessary adjustments to optimize the system performance. That Five-Year review recommended that this review focus on inspecting the cap to ensure its integrity.

During this second review, we inspected the landfill cap, perimeter fencing, and signage; interviewed the contractor responsible for O&M at the site, reviewed ground water monitoring reports, and reviewed the ARARs. With the exception of sparse vegetation in a northeast quadrant of the landfill cover, the landfill appears to be well-maintained.

Based on the present site conditions, the continued review of quarterly ground water monitoring data, and the information collected during the five-year review, the remedy is expected to continue to remain protective of human health and the environment. The attached Five-Year Review documents the current conditions at the site and states that there are no indications of potential remedy failure or deficiencies. EPA recommends continuing to evaluate the monitored natural attenuation plan, re-vegetation of sparse areas of the landfill cap, and continued O&M as specified in O&M Plan until Remedial Action Objectives are achieved as specified in the ROD.

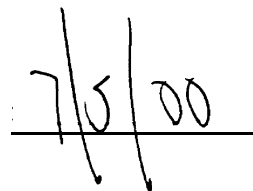
Attachment

Approved by:



Richard D. Green, Director
Waste Management Division
US EPA Region 4

Date:



Five-Year Review Report for 1995 to 1999

Hipps Road Landfill
Superfund Site
Jacksonville, Florida
EPA ID Number: FLD980709802



19 June 2000

P R E P A R E D F O R

Waste Control of Florida, Inc.
3850 Holcomb Bridge Road
Suite 105
Norcross, Georgia 30092

Five-Year Review Report for
1995 to 1999

Hipps Road Landfill
Superfund Site
Jacksonville, Florida
EPA ID No. FLD980709802

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Our Ref.:
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Date:
19 June 2000

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EPA Five-Year Review Signature Cover

Key Review Information

Site Identification			
Site name: Hipps Road Landfill Superfund Site			EPA ID: FLD980709802
Region:	State: Florida	City/County: Jacksonville/Duval Co.	
Site Status			
NPL status: Final			
Remediation status (under construction, operating, complete): Operating			
Multiple OU's* (highlight): Y N			
Construction completion date:			
Fund/PRP/Federal facility lead: Waste Control of Florida		Lead agency: USEPA Region IV	
Has site been put into reuse? (highlight): Y N			
Review Status			
Who conducted the review (EPA Region, State, Federal agency):			
Author name:		Author title:	
Author affiliation:			
Review period:**		Date(s) of site inspection:	
Highlight:	Statutory*** Policy	Policy Type (name): 1. Pre-SARA 2. Ongoing 3. Removal only 4. Regional Discretion	Review number (1,2, etc.) 2
Triggering action event:****			
Trigger action date: <i>from WasteLAN</i>			
Due date: <i>five years after triggering action date</i>			

*["OU" refers to operable unit.]

** [Review period should correspond to the actual start and end dates of the five-year review in WasteLAN.]

*** [see page B-8 and Chapter 1 for further explanation.]

****[see page B-9 and Chapter 1 for further explanation.]

Deficiencies:

Recommendations and Required Actions:

Protectiveness Statement(s):

Other Comments:

Signature of EPA Regional Administrator or Division Director and Date

Signature

Date

Name and Title

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1 Introduction

The United States Environmental Protection Agency (EPA), Region IV, has conducted a five-year review of the remedial actions implemented at the Hipps Road Landfill site in Jacksonville, Florida. This review was conducted from April 2000 through June 2000. This report documents the results of the review. ARCADIS Geraghty and Miller was contracted by Waste Control of Florida (WCF) to conduct an analysis in the support of the five-year review.

The purpose of five-year reviews is to determine whether the remedy at a site is protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in five-year review reports. In addition, five year review reports identify deficiencies found during the review, if any, and recommendations to address them.

EPA must implement five-year reviews consistent with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). CERCLA § 121(c), as amended, states:

If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented.

The NCP part 300.430(f)(4)(ii) of the Code of Federal Regulations (CFR) states:

If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.

This is the second five-year review for the Hipps Road Landfill site. The triggering action for this statutory review is the date of completion of the initial five-year view (February 95 to September 1995) as shown in EPA's WasteLAN database. During the first five-year review, the pump and treat system had operated only a short time. At the time of this five-year review, the pump and treat system had been operated for more than five years, the operational life for the system assumed in the Record of Decision (ROD).

2 Site Chronology

A chronology of site events for the Hipps Road Landfill Superfund site is presented in Table 1.

3 Background

The Hipps Road Landfill site is approximately a 12.6 acre site located on the southeastern corner at the intersection of Hipps Road and Exline Road in Jacksonville Heights, Duval County, Florida (Figures 1 and 2). Landfill operations were conducted on approximately 6.2 acres of the site.

The site is located in a semi-rural residential neighborhood. The land has relatively low topographic relief. There are no ecologically sensitive areas near Hipps Road Landfill and it is situated above the 500-year flood plain. Since 1985 when local residents were connected to the City water supply, groundwater has not been used as a drinking water supply in the area. Surface water is not used as a drinking water supply in the area. The surface waters nearby are used for recreational purposes such as swimming, boating, fishing, and similar activities.

The landfill area was initially a cypress swamp. In the mid-1960's, the property was owned by Mr. George Williams. In 1968, Mr. Williams contracted with WCF to fill the low-lying areas of the property. One source of the landfill materials was nearby U.S. Navy Facilities. Landfill operations ceased in 1970 and the landfill was covered by a thin layer of soil. Mr. Williams then subdivided the property into residential lots.

In the early 1980's, residents' complaints about unusual tastes and odors in private well water led to investigations that identified contamination in the groundwater. At that time, the City of Jacksonville began to provide residents with bottled water. The City completed installation of city water lines to the affected area in October 1983 and connected area residents to the city water supply.

The site was proposed for the National Priorities List (NPL) in September 1983. In August 1984, the site was approved for remedial activities under CERCLA and an EPA contractor was tasked to perform the Remedial Investigation/Feasibility Study (RI/FS). In September 1984, the site was finalized on the NPL.

In January 1985, EPA initiated an Emergency Response Action to connect local residents who were still using groundwater supplies to the City water supply. This response action was completed in September 1985.

In May 1986, EPA presented the results of the RI/FS. The RI/FS included geophysical investigations, soil sampling, and groundwater sampling to characterize the Site. The RI indicated that groundwater was the media of concern, and the migration of contaminants would occur in the lower sand aquifer northeasterly of the landfill. The primary contaminants at the site are vinyl chloride, benzene, and other volatile organic compounds in the groundwater. The risk assessment conducted during the FS concluded that none of the compounds detected in the site soil were present at concentrations of toxicological concern. The RI/FS was completed in September 1986.

4 Remedial Actions

4.1 Remedy Selection and Implementation

The RI/FS resulted in the EPA selecting a remedy in its Record of Decision (ROD) which was finalized in September 1986. Specific elements of the ROD include:

- Proper landfill closure;
- Recovery of contaminated groundwater with treatment at the Publicly Owned Treatment Works (POTW);
- Long-term (20 year) monitoring of groundwater after treatment is complete;
- Operation and maintenance of all components of the remedy which includes operating and maintaining the groundwater recovery system, groundwater monitoring, maintenance of the landfill cap and associated systems, and maintaining the connector sewer line and site security systems; and
- Institutional controls to include plugging and abandonment of impacted private wells, fencing the site, acquiring affected properties, and instituting a well drilling ban for a minimum of 20 years.

After the ROD was issued, EPA entered into a Partial Consent Decree (CD) with WCF. The Partial CD was entered by the United States District Court for the Middle District of Florida on January 25, 1989. Pursuant to the Partial CD, WCF agreed to design the landfill cover and groundwater recovery system and implement landfill closure and institutional controls.

Five homes located on the landfill were acquired by WCF and removed from the site in the spring and summer of 1988. The Landfill Closure Design was completed and

approved on May 22, 1989. In 1989, initial remedial actions including landfill closure and institutional controls were completed. A clay cap system was placed over the landfill and an eight-foot security fence was installed around the site. A perimeter ditch was constructed to carry runoff from the cover to a large retention basin southeast of the actual landfill area but within the fenced area. To prevent erosion of the clay cover, a vegetative soil cover was placed over the clay. To address the concern that placement of a low permeability soil cover over the landfill might cause the methane typically generated in the landfill to migrate laterally, a methane monitoring system was placed around the perimeter of the landfill. Closure of the landfill was completed in April 1990.

In 1988 and 1989, investigations were conducted to further delineate groundwater impacts as part of the pre-remedial design phase. The investigation indicated that the concentrations of contaminants were lower than were previously detected and extent of groundwater contamination was less than originally delineated during the RI/FS. Originally, the 1986 ROD involved recovery of contaminated groundwater with disposal to the local POTW. Due to escalating POTW disposal costs, the cost for disposal of the contaminated water was substantially higher than estimated in the FS. The ROD amendment of September 1990, approved a more cost-effective treatment alternative, the recovery of groundwater from five recovery wells, treatment of contaminated groundwater by air stripping, and the use of an on-site holding pond for disposal of the treated groundwater.

The contaminants which were detected above the clean-up goals and which are being remediated pursuant to the ROD amendment are vinyl chloride, benzene, lead, and chromium. Lead and chromium are not considered site-related contaminants; however, both of these compounds are reduced to meet the ROD clean-up goals before being discharged into the on-site storm water retention pond.

The groundwater recovery and treatment remedy includes the following monitoring programs in accordance with the ROD amendment and Remediation Goal Verification Plan (RGVP):

- Hydraulic monitoring of the area being effected by the recovery well system;
- Monitoring near-site groundwater quality for VOCs quarterly for two years and semi- annually for 18 years to provide an early warning system for the release of contaminants from the landfill;

- Monitoring off-site groundwater quality quarterly for VOCs and metals until target compounds are not detected above the ROD clean-up goals for four consecutive sampling events (two of which after the treatment system is shut off); and
- Monitoring the groundwater treatment system.

After the off-site chemically based remediation goals have been met, the off-site recovery system and monitoring wells will be plugged and abandoned. Because it is likely that different sections of the aquifer will be remediated after different times, individual recovery wells may be shut off at different times.

A CD to construct and operate the groundwater recovery and treatment system was entered by the US District Court on January 17, 1992 which defines the tasks to be performed as part of the Hipps Road Remedial Action.

In 1994, WCF implemented the ROD-specified groundwater pump and treat remedy. Shortly after startup, the FDEP required the system be shut down while it performed an air impact analysis for the air stripper off-gas, and the system was off-line for approximately one year. The air impact analyses indicated that direct discharge of air stripper off-gas to the atmosphere did not pose any adverse health effect to humans or the environment.

Both the original and amended RODS for this site included a requirement for abandonment of potentially affected private wells. During the initial five-year Review, the EPA indicated that WCF demonstrated a good faith effort to identify potentially affected private wells and abandoned wells where permission was granted to implement well abandonment. Some private well owners had refused to grant permission for site access and well abandonment, or failed to respond to repeated requests for site access and permission to grout their wells. In an effort to ensure that all options to achieve private well abandonment, the City of Jacksonville's BioEnvironmental Service Division and the St John's River Water Management District (SJRWMD) agreed that the SJRWMD would assist in the effort to achieve special criteria area pursuant to the SJRWMD rule 40C3 of the Florida Administrative Code (FAC) 62.532 and the Florida Statute 373.309. Under this rule the water management district implemented an institutional control by seeking legal measures to effect the abandonment of those wells located in the special criteria area. In August 1994, EPA issued an Explanation of Significant Difference (ESD), the purpose of which was to alter the method by which the abandonment of private wells impacted by the site groundwater is achieved. By 1997, all private wells had been abandoned in the area.

4.2 Progress Since the Last Five-Year Review

The last five-year review completed in September 1995 indicated that the selected remedy remains protective of human health and the environment, complies with Federal and State requirements that are applicable or relevant and appropriate to this remedial action, and is cost effective. The results of the last five-year review indicated that with the exception of areas of sparse vegetation on the landfill cover and rutted out or eroded areas in the perimeter ditch, the landfill closure appeared to be maintained. The EPA collected samples from the suspected erosion areas to evaluate the possibility of a release. The analytical data indicated that no hazardous or toxic substance were being released from the landfill along the surface water pathway. The groundwater treatment and recovery system appeared to be functioning properly. Site access was controlled and the fence was well maintained.

Recommendations from the last five-year review were to review the report of landfill repairs to determine adequacy of repairs to the perimeter ditch and revegetation of the landfill, review monitoring data to evaluate the progress of the remediation, and make adjustments as necessary to optimize performance of the system.

The repairs to the perimeter ditch and landfill re-vegetation completed in 1995 adequately repaired the landfill cover.

The groundwater recovery and treatment system was designed to shut down in the event that the retention pond's capacity was exceeded. Because the pond received both discharge from the treatment system and runoff from the site, capacity had been exceeded often during the first year of operation triggering system shutdown. In the previous five-year review, EPA recommended that options should be considered to optimize the treatment systems' performance. The effectiveness of the holding pond was re-evaluated and the high water level in the pond was found to be due to capacity limitations. The holding pond is limited in size by property boundaries and the location of the landfill. In June 1996, EPA issued a second ESD; the purpose of this ESD was to discharge treated water to the POTW to maintain continuous operation of the treatment system in the event that the high water level is reached in the holding pond.

In June 1996, WCF received permission from EPA to install an effluent pipeline to connect the groundwater treatment system to the POTW sewer line. In July 1996, the POTW effluent pipeline construction was completed. In August 1996, after the POTW line was tested and adjusted, POTW effluent discharge was initiated in accordance with permit number GW01 issued by the City of Jacksonville Department of Public Utilities, Water Reclamation Division.

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Superfund Site
Jacksonville, Florida

On or about September 3, 1996, a vertical joint in the POTW pipeline failed and the backflow restrictor in the Hipps Road right-of-way failed to prevent the backflow of water from the force main. Consequently, treated water from the force main was released onto the ground surface. The pipeline was repaired and impacted soil was removed from the site by September 7, 1996. The POTW discharge system was pressure tested and adjusted between September 7 and 27 after which the system was determined to be functional and fit for service.

A leak in the POTW effluent pipeline occurred on February 22, 1997. Subsequently, the POTW discharge system was turned off, the pipeline was repaired, and hydrostatic pressure tests were performed on March 5 and 6, 1997 to evaluate the integrity of the pipeline. The results of the pressure tests were evaluated and a decision was made to replace the schedule 40 polyvinyl chloride (PVC) pipeline with a schedule 80 PVC pipeline. The pipeline was replaced during the week of March 24, 1997 and a hydrostatic pressure test performed on March 31, 1997 indicated that the new pipeline was fit for service. Since October 1996, treated water has been discharged to the POTW when the high water level is reached in the holding pond. This system modification has maintained continuous operation of the treatment system except for occasional shutdowns due to minor mechanical failures.

Recovery well RW-5 was shut down in 1996 and RW-4 was shut down in November 1997 due to the reduction of contaminant levels below the cleanup goals at these locations

On May 11, 1999, a meeting was held between WCF, ARCADIS Geraghty & Miller, the USEPA, and the Florida Department of Environmental Protection (FDEP) to discuss the status of the Hipps Road Landfill remediation. The pump and treat groundwater remedy, which was installed in 1994, has effectively reduced groundwater contaminant concentrations to levels slightly above cleanup criteria. The benzene and vinyl chloride concentrations have exhibited asymptotic concentrations; however, it was anticipated that due to inherent limitations of the pump and treat system, continued operation of the pump and treat remedy would not alter the asymptotic trend. Therefore, continued operation of the groundwater pump and treat system is not anticipated to achieve cleanup criteria for many years, if ever.

At the May 11, 1999 meeting, an evaluation of remedial enhancement or replacement options which have the potential of achieving site closure more rapidly and/or more cost effectively than the current remedy was presented to the regulators. The regulatory agencies agreed that the monitored natural attenuation (MNA) option deserved more thorough consideration. As a result of this meeting, a Monitored Natural Attenuation

(MNA) Work Plan, Hipps Road Landfill Superfund Site (July 1999) was prepared to present the justification and approach for evaluating the feasibility of monitored natural attenuation of residual groundwater impacts at the Hipps Road Landfill.

On August 30, 1999, the EPA approved a work plan to conduct a pilot study to investigate the feasibility of Natural Attenuation as an alternative remedy for a one-year period. In September 1999, the EPA and WCF shut down the wells to conduct a year long pilot study to determine if natural attenuation will work at the site. Detection of stable or decreasing benzene and vinyl chloride concentrations during the pilot study will justify continuation of the pilot study. In the event that significant benzene and vinyl chloride concentration increases are detected in the leading edge of the current plume, reactivation of the pump and treat system may be necessary.

4.3 Systems Operations/Operation and Maintenance

Operation and Maintenance (O&M) for the landfill cover requires inspecting the cover of the landfill and security system surrounding the landfill on a semi-annual basis. Methane gas is monitored during each landfill inspection and the entire landfill is inspected for evidence of gas seepage. Maintenance of the landfill cover includes mowing semiannually and re-vegetating any areas that have become devoid of grass.

During the five year review period, the landfill inspections and methane monitoring were conducted quarterly between January and June 1995; semi-annually between June and December 1995 and during 1996 and 1997; and quarterly during 1998 and 1999. Regrading and sodding of the perimeter ditch around the landfill was undertaken in August 1995 to enhance performance.

During the five-year period, methane gas readings have for the most part been detected below the LEL for methane of 5 percent by volume. During two methane monitoring events, methane gas readings above the methane LEL were detected at one or two of the methane monitoring points. Soil gas surveys conducted near these probes did not detect methane at the property boundary.

O&M for the groundwater treatment system is performed on those components of the selected remedy as needed. The air stripping tower, air blower system, main control panel, treatment effluent stilling well and remote telemetry system are monitored monthly to quarterly when this system is being operated. Piezometers, recovery wells (vaults, appurtenances, and pumps), force main water transmission lines and monitoring wells are inspected quarterly.

During the five-year review period operations, the pump and treatment system O&M was conducted in accordance with the site O&M plan schedule. The modification to the treatment system effectively reduced the down time the treatment system has experienced. While the treatment system was in operation, the system performed as designed and maintained hydraulic control of the contaminant plume.

The estimated costs for O&M of the groundwater recovery system, O&M for the onsite treatment system, influent/effluent sampling, groundwater monitoring and inspection & maintenance was \$142,000 for the first year of this review period and \$109,000 for each year thereafter. Actual O&M costs over the five-year period have been less than the estimated costs in the Groundwater Recovery System Design (May, 1990).

5 Second Five-Year Review Findings

The second five-year review team includes John Blanchard of USEPA, Theresa Stone of Waste Management, and Jim Bedessem and Kathy Thalman of ARCADIS Geraghty & Miller, Inc. The tasks of the five-year review included document review, interviews with contractors who operated and monitored the groundwater remediation system, a site inspection, review of applicable or relevant and appropriate requirements (ARARs), monitoring data evaluation, and preparation of the five-year review report. A list of the documents reviewed is presented in Appendix A.

5.1 Interviews

Golder Associates Inc. was responsible for the site operation and maintenance activities until September 31, 1997. On October 1, 1997, Handex assumed responsibilities of Supervising Contractor for site operation and maintenance activities. Monthly progress reports and quarterly monitoring reports (if necessary) were reviewed to assess operation of the groundwater recovery system, on-site treatment system, and condition of the site landfill.

On April 25, 2000, interviews were conducted with Handex employees Michael H. Garbee (General Manager) and Clifford M. White (Operations Specialist) to discuss site operation and maintenance activities conducted between October 1, 1997 and December 31, 1999. There were no problems in the implementation of institutional and access controls. Groundwater production increased because of POTW line installation. Some system down time occurred due to mechanical problems and because of electrical wiring work being conducted by the local utility.

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There were problems with the remote telemetry system in 1999. In February and March, the low flow alarm kept shutting down the system because of a faulty output module for RW-2. Since the RemSys manufacturer is no longer in business, the problem was repaired by rewiring the module to use abandoned RW-4 output to run active RW-2. In July 1999, the system was off due to a tripped circuit for the tower blower motor. The problem appears to be failed software input in the RemSys control system. The system remains on alarm even when the circuitry is disconnected from the RemSys control panel. Operating the system despite the problem would mean running without a failsafe for the blower system. Therefore, the system was turned off in July and has remained off since then due to the start of the MNA pilot study. Since the company that manufactured RemSys Systems is out of business it will be necessary to bypass the failed portion of the RemSys control panel using a mini controller if the system is turned on. In September 1999, a new subpanel was installed to keep the system in standby mode due to the requirement to have the system as a backup should the contaminants not be contained.

5.2 Site Inspection

On April 25, 2000, John Blanchard of the EPA, Theresa Stone of Waste Management, and Jim Bedessem and Kathy Thalman of ARCADIS Geraghty & Miller, Inc. conducted the site inspection to evaluate components of the remediation with respect to the Consent Decree and Decision Documents. During the site inspection, the landfill cover was inspected and maintenance of institutional controls (to restrict access) were evaluated. The remediation system was shutdown beginning in July 1999 prior to implementing the MNA Pilot Study and will remain shut down during the duration of the MNA project. Since the remediation system is shut down, the operation of the system was not inspected during this five-year evaluation. However, the readiness of the system to be started up again was evaluated.

An inspection for leachate seeps was conducted on the side slopes of the landfill and no seeps were observed. Additionally no areas of moist soil were noted which would have indicated leachate seepage. The perimeter fence was observed to be in good condition and access to the site was adequately restricted. A tree had fallen against the fence in the southeast corner of the landfill; however, the fence was only slightly damaged. With the exception of an area of sparse vegetation located on the northwestern part of the landfill, closure appeared to be well maintained. No settlement, cracks or erosion were observed on the landfill cover. No trees or shrubs were growing in the landfill cover. Due to the low amount of rainfall and shut down of the treatment system, the retention pond was dry during the site inspection. No siltation or erosion was observed in the retention pond. The perimeter ditch system that collects runoff from the landfill cover

was in good condition. The site inspection checklist completed during the site inspection is presented in Appendix B and photographs are presented in Appendix C.

In order to collect the most representative groundwater samples for the MNA evaluation, the pumps have been pulled from recovery wells RW-1, RW-2 and RW-3. The on-site treatment system is in good condition and ready to manually start up if necessary. The RemSys needs operation and maintenance if long term operation is required.

5.3 ARARs Review

A review of the ARARs under which the Hipps Road Landfill closure system was designed was conducted to determine whether changes in ARARs, toxicity, or other contaminant characteristics affect protective cleanup levels and/or the protectiveness of the remedy. The following ARARs were reviewed:

- * Federal Clean Water Act/Safe Drinking Water Act
- * Federal Resource Recovery and Conservation Act Subtitle D
- * Federal Toxic Substances Control Act
- * Federal Clean Air Act
- * Federal Endangered Species Act
- * National Historical Preservation Act
- * Federal Occupational Safety and Health Administration Act
- * Florida Administrative Code Chapter 62
- * Florida Air and Water Pollution Control Act

During a review of these ARARs, no changes were identified in the above standards that would challenge the protectiveness of the remedy selected.

5.4 Data Review

Data reviewed during the five-year review included treatment system monitoring data, groundwater data collected from the near-site monitoring network, and groundwater data collected from the off-site monitoring network. In addition to groundwater data collected between January 1995 and September 1999 when the treatment system was in operation, data collected in October and December 1999 and March 2000 for the MNA pilot study after the pump and treat system was shut down were also evaluated.

Analytical results for the air-stripper effluent indicate the treatment system effectively removes contaminants prior to discharge. The treated discharge has never exceeded acceptable discharge concentrations.

Analytical results for on-site monitor wells have routinely indicated non-detectable concentrations of the compounds of concern, benzene and vinyl chloride, since 1989. Concentration versus time graphs for on-site monitor wells MW-5, TMW-5S and TMW-5I are presented in Appendix D.

Analytical results for off-site monitor wells have routinely indicated very low concentrations of benzene and vinyl chloride. Concentration versus time graphs for offsite recovery wells RW-1, RW-2, RW-3, TMW-3I, TMW-6I, TMW-7I, TMW-8I, TMW-9I and TMW-13I are presented in Appendix D. Contaminant concentrations and the size of the off-site contaminant plume have been effectively reduced by the operation of the system since 1994. While there has been noticeable shrink-age of the benzene and vinyl chloride plumes since commencement of the pump and treat remedy, and decreasing concentration trends have been achieved at all wells, the residual concentrations at some locations exceed the ROD-specified cleanup criteria of 1 ug/L. The benzene and vinyl chloride concentrations have exhibited asymptotic concentrations for several quarters; however, it is anticipated that due to inherent limitations of the pump and treat system, continued operation of the pump and treat remedy would not alter the asymptotic trend. Therefore, continued operation of the groundwater pump and treat system is not anticipated to achieve cleanup criteria for many years. Concentrations of benzene and vinyl chloride have continued to decline since the pump and treat system was shut down for the MNA evaluation.

6 Assessment

There have been no changes in the conditions external to the site remedy such as land use or projected land used, contaminants of concern, and hydrologic/hydrogeologic conditions. The site Health and Safety Plan/Contingency Plan is adequate and has been properly implemented. Site access was controlled, warning signs were in place, and the fence was well maintained.

While the system was in operation, the O&M of the pump and treat system was properly implemented and adequate for the site. Continued decrease of site contaminants after the treatment system was shut down indicates that MNA may be a viable option. The MNA is scheduled to be completed by September 2000.

With the exception of sparse vegetation in the northwest quadrant of the landfill cover, the closure appeared to be well maintained.

7 Deficiencies

No deficiencies were found during the five-year review.

8 Recommendations and Required Actions

Recommendations based on this second five-year review include the following items:

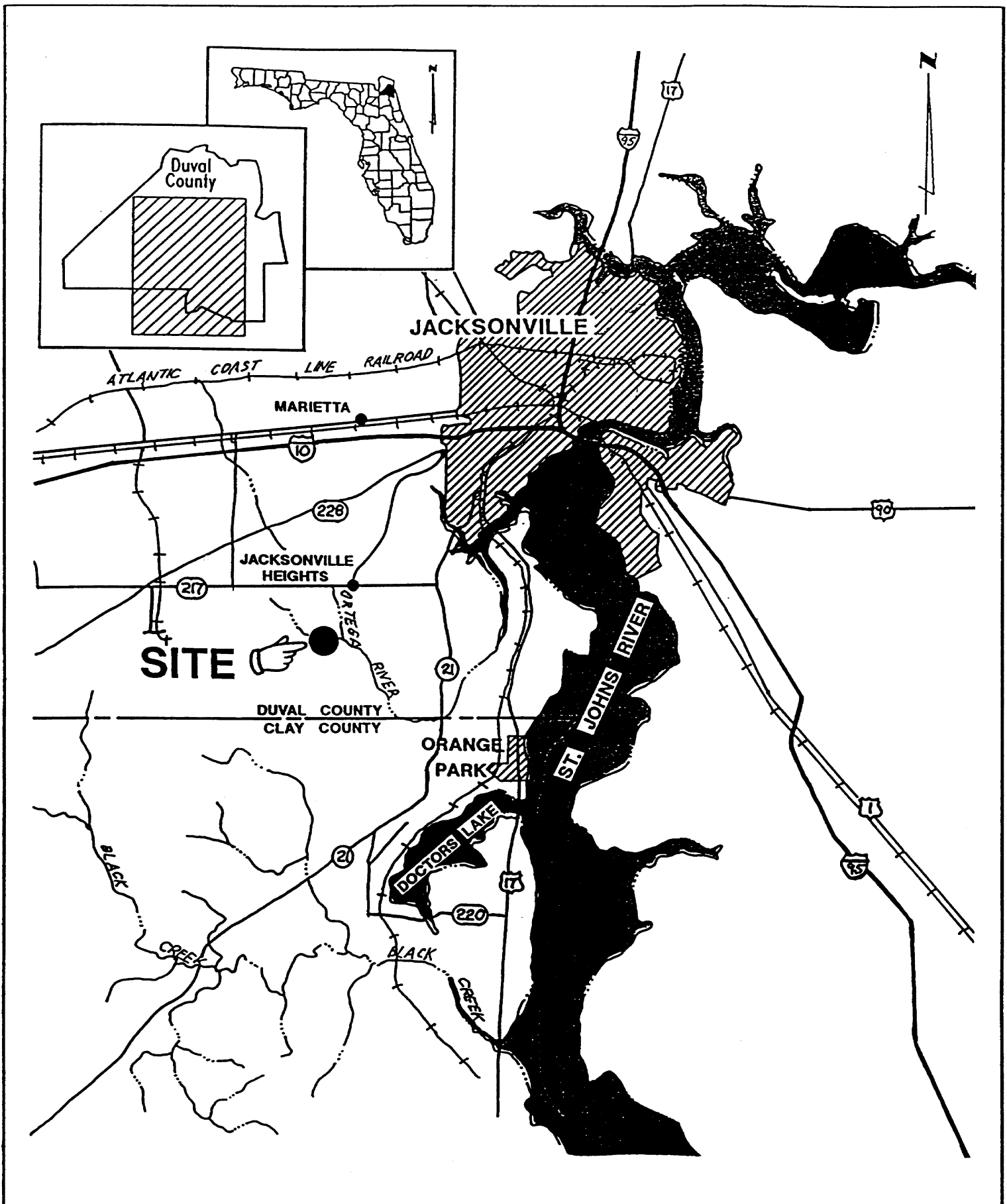
1. The northwest quadrant of the landfill requires re-vegetation because the grass cover is sparse in this area.
2. Complete the MNA evaluation and determine if the pilot study data trends indicate effective natural attenuation is occurring such that concentrations are approaching the cleanup criteria, and the risk to receptors along the exposure pathway is acceptable. If these criteria are met, recommend a full-scale implementation of MNA. If the pilot study data trends indicate natural attenuation is not effectively reducing concentrations, or that there is unacceptable risk to receptors along the exposure pathway, other remedial enhancement options should be reevaluated. If concentrations of benzene and vinyl chloride increase significantly, operation of the groundwater pump and treat system should resume.

9 Protectiveness Statement

The selected remedy remains protective of human health and the environment and complies with Federal and State requirements that are applicable or relevant and appropriate to this remedial action. Operation of the pump and treat system was effective in containment and reduction of the site contaminants. The MNA monitoring results indicate the concentrations of benzene and vinyl chloride have continued to decline after the pump and treat system was shutdown. Therefore, this remedy continues to be protective to human health and the environment.

10 Next Review

Another five-year review should be conducted by July 12, 2005. During this review the selected remedial enhancement option should be evaluated.



ARCADIS GERAGHTY & MILLER



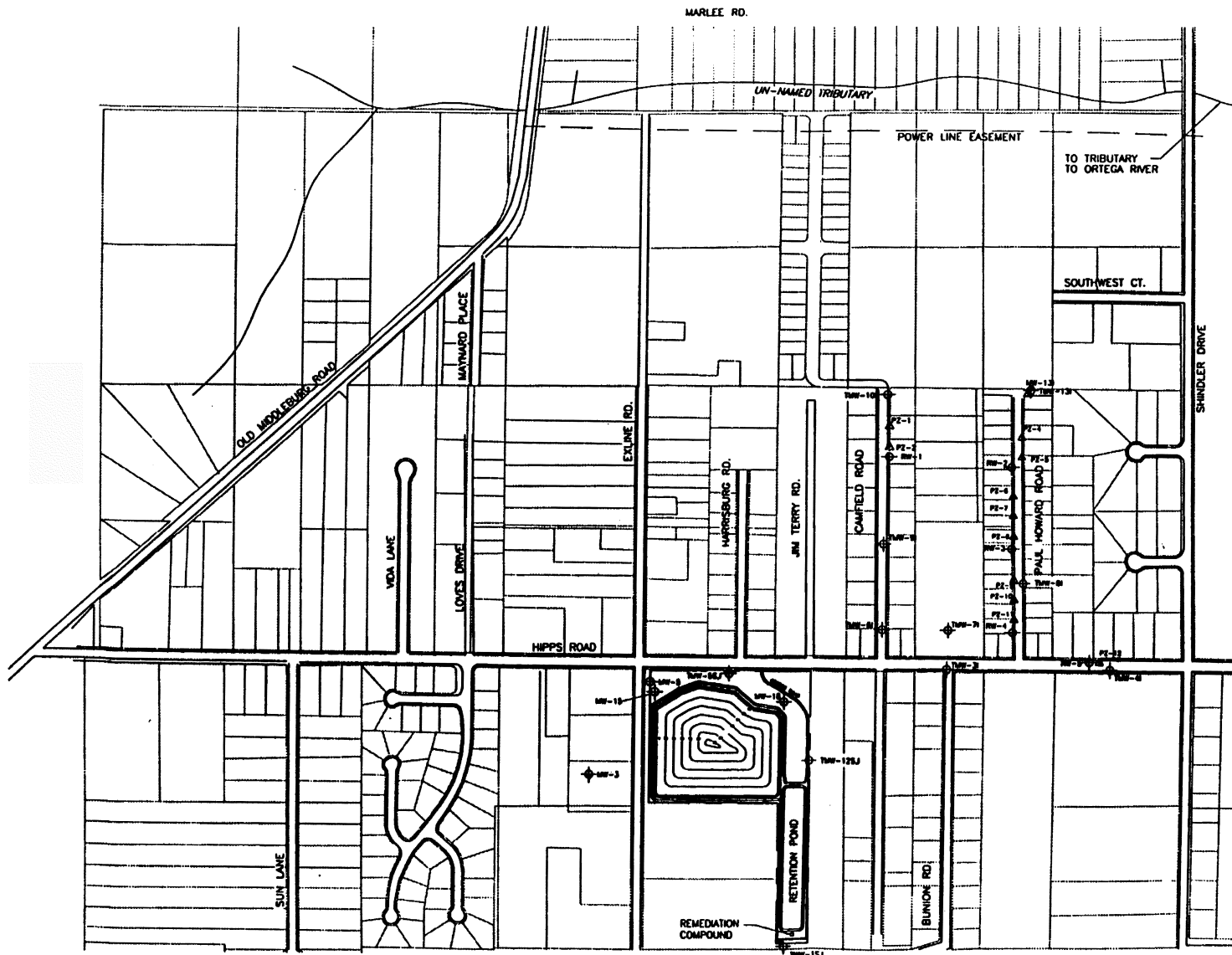
14497 North Dale Mabry Hwy., Suite 115
Tampa, Florida 33618
Tel: 813/961-1921 Fax: 813/961-2599

SITE LOCATION MAP

HIPPS ROAD LANDFILL
JACKSONVILLE, FLORIDA

FIGURE

1



LEGEND

- PARCEL BOUNDARY LINE
- - - LANDFILL BOUNDARY LINE
- ◆ RW-4 RECOVERY WELL LOCATION
- ◆ TMW-51 MONITOR WELL LOCATION
- △ PZ-12 PIEZOMETER LOCATION

NOTES: 1. RW-5 AND TMW-41 WERE ABANDONED IN AUG. 95.

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ARCADIS GERAGHTY & MILLER

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Tampa, Florida 33618
Tel: 813/961-1921 Fax: 813/961-2509



DATE
7/11/99
DRAWN
1998
CADD FILE NAME
HIPPS.LDW

PROJECT MANAGER
SM
LEAD DESIGN PROF.
SM
PROJECT NUMBER
TF001108.0000

PROJECT OFFICER
CR
CHECKED
SM

SITE LAYOUT

HIPPS ROAD LANDFILL
JACKSONVILLE, FLORIDA

FIGURE NUMBER

2

Tables

Table 1
Chronology of Site Events
Hipps Road Landfill
Jacksonville, Florida

Event	Date
Initial discovery of problem or contamination	April 1983
NPL listing	Initial Listing-September 1983, Final Listing - September 1984
Removal actions/Emergency Response	Connected Local Residence to City Water: 1/21/85 to 9/30/85
RI/FS complete	September 3, 1986
ROD signature	September 3, 1986
ROD Amendments or ESDs	September 21, 1990 - ROD Amendment for treatment system modification; August 1984 - ESD to alter the method by with the abandonment of private wells; June 1996- ESD2 to discharge water to POTW
Enforcement documents (CD, AOC, UAO)	Partial Consent Decree January 25, 1989 for landfill closure, institutional controls, groundwater recovery system design; CD January 15, 1992 for construction of groundwater pump and treat system.
Remedial Design start	Landfill Closure Design: September 1986 Groundwater Pump and Treat System Design: August 1988
Remedial Design complete	Landfill Closure Design: May 22, 1989 Groundwater Pump and Treat System Design: November 14, 1990
Actual RA start	Landfill Closure: 1988 (removal of houses) Groundwater Pump and Treat System: March 15, 1994
Construction dates (start, finish)	Landfill Closure: May 22, 1989 -November 14, 1990 Pump and Treat System: January 15, 1992 - September 2, 1994
Construction Completion date	Landfill Closure: November 14, 1990 Pump and Treat System: August 29, 1994
Previous Five-Year Review	September 1995

Table 2
Annual O&M Costs
Hipps Road Landfill
Jacksonville, Florida

Date From	Date To	Total Cost Rounded to Nearest \$100	1990 Estimated Cost
01-Jan-95	31-Dec-95	\$105,200	\$142,000
01-Jan-96	31-Dec-96	\$91,600	\$109,000
01-Jan-97	31-Dec-97	\$113,800	\$109,000
01-Jan-98	31-Dec-98	\$76,000	\$109,000
01-Jan-99	31-Dec-99	\$66,000	\$109,000

Appendix A

List of Documents Reviewed

List of Documents Reviewed for 1995-1999 Five-Year Review
Hipps Road Landfill
Jacksonville, Florida

Reports and Manuals

ARCADIS Geraghty & Miller, Inc. Monitored Natural Attenuation Work Plan, Hipps Road Landfill Superfund Site, Jacksonville, Florida, EPA ID Number: FLD98070982. July 1999

Golder Associates, Inc. Revised Operation and Maintenance Plan for the Groundwater Recovery and Treatment System, Hipps Landfill Site, Jacksonville, Florida. May 1994.

Golder Associates, Inc. Review of Trial Test Analytical Results, Hipps Road Landfill, Jacksonville, Florida. November 24, 1993.

Golder Associates, Inc. Revised Report on Remediation Goal Verification Plan, Hipps Road Landfill Remedial Action, Jacksonville, Florida. September 1993

Golder Associates, Inc. Report of Groundwater Recovery System Design, One Hundred Percent Completion, Hipps Road Landfill, Jacksonville, Florida. May 1990.

Golder Associates, Inc. Remedial Action Plan Construction of Landfill Closure Cover, Hipps Road Landfill, Jacksonville, Florida. October 1989.

Golder Associates, Inc. Closure Cover Water Management Plan (As built). May 30, 1989.

Handex. Nineteenth Quarter Operation and Maintenance Report, Hipps Road Landfill, Jacksonville, Florida. October 1, 1998-December 31, 1998

Handex. Quarterly Remediation System Operation and Maintenance Report, Hipps Road Landfill, Jacksonville, Florida. October 1, 1997 - December 31, 1997

Hipps Road Landfill Discharge Pump System Operations and Maintenance.

OHM Remediation Services, Inc. Plans and Details, Hipps Road Landfill, Hipps Rd., Jacksonville, Duval County, Florida. 3 POTW line construction drawings. April 1996.

United States Environmental Protection Agency. Five-Year Review, Hipps Road Landfill Site, Duval County, Florida. USEPA Region IV. November 1995.

United States Environmental Protection Agency. Record of Decision Amendment Summary of Remedial Alternative Selection, Hipps Road Landfill Site, Jacksonville, Duval County, Florida. USEPA Region IV. September 21, 1990.

United States Environmental Protection Agency. Superfund Fact Sheet, EPA Region IV, Atlanta, Georgia, Explanation of Significant Difference, Hipps Road Landfill Superfund, Jacksonville, Duval County, Florida. June 1996.

Internet Information

United States Environmental Protection Agency. U.S. EPA Region 4 Florida NPL Site Summaries, "Hipps Road Landfill," Revised January 2000. 6 June 00 <[http://www.epa.gov/region4/waste/npl/ni\)lfln/hipprdf1.htm](http://www.epa.gov/region4/waste/npl/ni)lfln/hipprdf1.htm)>.

United States Environmental Protection Agency. CERCLIS Site Information, "Hipps Road Landfill," Updated 20 April 2000. 6 June 00 <<http://www.epa.gov/superfund/sites/cursite/c3fl/a0400908.htm>>.

Monthly/Annual Progress Reports

Golder Associates, Inc. Hipps Road Landfill Remedial Action Progress Reports for the Months of January 1995, February 1995, March 1995, April 1995, May 1995, June 1995, July 1995, August 1995, September 1995, October 1995, November 1995, and December 1995.

Golder Associates, Inc. Hipps Road Landfill Remedial Action Progress Reports for the Months of January 1996, February 1996, March 1996, April 1996, May 1996, June 1996, July 1996, August 1996, September 1996, October 1996, November 1996, and December 1996.

Golder Associates, Inc.. Hipps Road Landfill Remedial Action Progress Reports for the Months of March 1997, April 1997, June 1997, July 1997, August 1997, September 1997.

Handex of Florida, Inc. Hipps Road Landfill Remedial Action Progress Report for the Months of October 1997, November 1997, and December 1997.

Handex of Florida, Inc. Hipps Road Landfill Remedial Action Progress Reports for the Months of January 1998, February 1998, March 1998, April 1998, May 1998, June 1998, July 1998, August 1998, September 1998, October 1998, November 1998, and December 1998.

Handex of Florida, Inc. Hipps Road Landfill Remedial Action Progress Reports for the Months of January 1999, February 1999, March 1999, April 1999, May 1999, June 1999, July 1999, August 1999, September 1999, October 1999.

Handex of Florida, Inc. United States v. Wastecontrol of Florida, Inc., DOJ #90-11-3-232, Consent Decree Item 36: Annual Update (1998) February 17, 1999

Hipps Road Landfill Remedial Action 1997 Annual Report

Hipps Road Landfill Remedial Action 1996 Annual Report

Hipps Road Landfill Remedial Action 1995 Annual Report

Correspondence:

1996 and 1997 Correspondence between OHN Remediation Services Corp. and Waste Management of Florida, Inc. on status of POTW pipeline construction.

Permits

Domestic Wastewater Collection/Transmission Systems Certification of Completion of Construction for POTW pipeline. Signed September 16, 1996

Permit to discharge treated groundwater into the City of Jacksonville's Sanitary Sewer, Permit No. GW01.

Appendix B

Site Inspection Checklist

Five-Year Review Site Inspection Checklist (Template)

(Working document for site inspection. Information maybe filled in by hand and attached to the five-year review report as supporting documentation of site status.)

I. SITE INFORMATION

Site name: Hipps Road Landfill Superfund Site Date of inspection: April 25, 2000
Location and region: Jacksonville Heights, Duval County, Florida EPA ID: FLD980709802
Agency, office or company leading the Five-Year Review: ARCADIS Geraghty & Miller, Inc Weather/temperature: Sunny, 80°F
Remedy Includes (Check all that apply)
☒ Landfill cover/containment
☒ Groundwater pump and treatment
☐ Surface water collection and treatment
☒ Other Institutional Controls, Monitored Natural Attenuation (MNA) is being evaluated

☒ Inspection team roster attached ☒ Site map attached

II. INTERVIEWS (Check all that apply)

- O&M site manager Theresa Stone, P.G. Project Manager April 25, 2000 Waste Control of Florida
Name Title Date
Interviewed ☒ at site ☐ at office ☒ by phone Phone no. 770-409-7406
Problems, suggestions; ☐ Report attached _____
- O&M staff Cliff White Operations Specialist April 25, 2000 Handex of Florida, Inc.
Name Title Date
Interviewed ☐ at site ☒ at office ☐ by phone Phone no. 904-268-9551 ext:31
Problems, suggestions; ☐ Report attached PLC Needs O&M for long term operation
- Local regulatory authorities and response agencies (i.e., state and tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.
Agency _____
Contact _____
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached _____
Agency _____
Contact _____
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached _____

Agency _____
Contact _____
Name Title Date Phone no.

Problems; suggestions; ☐ Report attached _____

Agency _____
Contact _____
Name Title Date Phone no.

Problems; suggestions; ☐ Report attached _____

4. Other interviews (optional) ☐ Report attached.

III. ~~ON~~ SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply) Records are not kept on site.

1. **O&M Manual and As-Builts** ☒ Readily available ☒ Up to date ☐ N/A

☒ As-builts ☒ Readily available ☒ Up to date ☐ N/A

☒ Maintenance Logs ☒ Readily available ☒ Up to date ☐ N/A

Remarks Available at Theresa Stone's office, Golder Associates (January 1995 to September 1997)
Handex of Florida, Inc. (October 1997 to present)

2. **Site Specific Health and Safety Plan** ☒ Readily available ☒ Up to date ☐ N/A

☐ Contingency plan/emergency response plan ☐ Readily available ☐ Up to date ☒ N/A

Remarks _____

3. **O&M and OSHA Training Records** ☐ Readily available ☐ Up to date ☐ N/A

Remarks Not available at site, O&M and OSHA training records are available upon request

4. **Permits and Service Agreements**

☐ Air discharge permit ☐ Readily available ☐ Up to date ☒ N/A

☐ Effluent discharge ☐ Readily available ☐ Up to date ☒ N/A

☐ Waste disposal, POTW ☒ Readily available ☒ Up to date ☐ N/A

☐ Other permits _____ ☐ Readily available ☐ Up to date ☒ N/A

Remarks _____

5. **Gas Generation Records** ☒ Readily available ☒ Up to date ☐ N/A

Remarks Fifteen (15) methane monitoring probes are located around the perimeter of the landfill

6. **Settlement Monument Records** ☐ Readily available ☐ Up to date ☒ N/A

Remarks Settlement monuments were not placed on the surface of the landfill.

7. **Groundwater Monitoring Records** ☒ Readily available ☒ Up to date ☐ N/A

Remarks _____

8. **Leachate Extraction Records** ☐ Readily available ☐ Up to date ☒ N/A

Remarks A leachate extraction system was not installed.

9. **Discharge Compliance Records**
☐ Air ☐ Readily available ☐ Up to date ☒ N/A
☒ Water (effluent) ☒ Readily available ☒ Up to date ☐ N/A
Remarks _____

10. **Daily Access/Security Logs**
☐ Readily available ☐ Up to date ☒ N/A
Remarks The gate was locked, there is no regular access to site

IV. O&M COSTS

1. **O&M Organization**
☐ State in-house ☐ Contractor for State
☐ PRP in-house ☒ Contractor for PRP – Handex of Florida, Inc.
☐ Other _____

2. **O&M Cost Records**
☒ Readily available ☒ Up to date
☒ Funding mechanism/agreement in place
Original O&M cost estimate see below ☐ Breakdown attached

Total annual cost by year for review period if available

				1990 Cost Estimate
From <u>1/1/95</u> To <u>12/31/95</u>	<u>\$105,200</u>	<input type="checkbox"/> Breakdown attached		\$142,000
Dates	Total cost			
From <u>1/1/96</u> To <u>12/31/96</u>	<u>\$91,600</u>	<input type="checkbox"/> Breakdown attached		\$109,000
Dates	Total cost			
From <u>1/1/97</u> To <u>12/31/97</u>	<u>\$113,800</u>	<input type="checkbox"/> Breakdown attached		\$109,000
Dates	Total cost			
From <u>1/1/98</u> To <u>12/31/98</u>	<u>\$76,000</u>	<input type="checkbox"/> Breakdown attached		\$109,000
Dates	Total cost			
From <u>1/1/99</u> To <u>12/31/99</u>	<u>\$86,000</u>	<input type="checkbox"/> Breakdown attached		\$109,000
Dates	Total cost			

3. **Unanticipated or Unusually High O&M Costs During Review Period**

Describe costs and reasons: _____

V. GENERAL SITE CONDITIONS

Whenever possible, actual site conditions should be documented with photographs.

A. Fencing

1. Fencing damaged ☒ Location shown on site map ☒ Gates secured ☐ N/A

Remarks No damage evident except for slight damage by tree at southeast corner of landfill.

B. Site Access

1. Access restrictions, signs, other security measures ☐ Location shown on map ☐ N/A

Remarks Present

C. Perimeter Roads

1. Roads damaged ☒ Location shown on site map ☒ Roads adequate ☐ N/A

Remarks _____

D. General

1. Vandalism/trespassing ☐ Location shown on site map ☒ No vandalism evident

Remarks _____

2. Land use changes onsite ☒ N/A

Remarks _____

3. Land use changes offsite ☒ N/A

Remarks _____

4. Institutional controls (site conditions imply institutional controls not being enforced) ☒ N/A

Agency _____

Contact _____

Name

Title

Date

Phone no.

Problems; suggestions; ☐ Report attached _____

VI. LANDFILL COVER ☒ Applicable ☐ Not applicable

A. Landfill Surface

1. Settlement (Low spots) ☐ Location shown on site map ☒ Settlement not evident

Areal extent _____ Depth _____

Remarks _____

2. Cracks ☐ Location shown on site map ☒ Cracking not evident

Lengths _____ Widths _____ Depths _____

Remarks _____

3. Erosion ☐ Location shown on site map ☒ Erosion not evident

Areal extent _____ Depth _____

Remarks _____

4. **Holes** ☐ Location shown on site map ☒ Holes not evident

Areal extent _____ Depth _____

Remarks _____

5. **Vegetative Cover** ☒ Grass ☒ Cover properly established ☐ No signs of stress

☐ Trees/Shrubs (indicate size and locations on a diagram)

Remarks No trees/shrubs. The grass is thin in some areas in the northwest quadrant of the landfill

6. **Alternative Cover (armored rock, concrete, etc.)** ☒ N/A

Remarks _____

7. **Bulges** ☐ Location shown on site map ☒ Bulges not evident

Areal extent _____ Height _____

Remarks _____

8. **Wet Areas/Water Damage** ☒ Wet areas/water damage not evident

☐ Wet areas ☐ Location shown on site map Areal extent _____

☐ Ponding ☐ Location shown on site map Areal extent _____

☐ Seeps ☐ Location shown on site map Areal extent _____

☐ Soft subgrade ☐ Location shown on site map Areal extent _____

Remarks _____

9. **Slope Instability** ☐ Slides ☐ Location shown on site map ☒ No evidence of slope instability

Areal extent _____

Remarks _____

- B. **Benches** ☐ Applicable ☒ Not applicable

(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

1. **Flows Bypass Bench** ☐ Location shown on site map ☐ N/A or okay

Remarks _____

2. **Bench Breached** ☐ Location shown on site map ☐ N/A or okay

Remarks _____

3. **Bench Overtopped** ☐ Location shown on site map ☐ N/A or okay

Remarks _____

- C. **Letdown Channels** ☐ Applicable ☒ Not applicable

(Channel lined with erosion control mats, riprap, grout bags, or gabions that descends down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

1. **Settlement** ☐ Location shown on site map ☐ No evidence of settlement
Areal extent _____ Depth _____
Remarks _____
-
2. **Material Degradation** ☐ Location shown on site map
☐ No evidence of degradation
Material type _____ Areal extent _____
Remarks _____
-
3. **Erosion** ☐ Location shown on site map ☐ No evidence of erosion
Areal extent _____ Depth _____
Remarks _____
-
4. **Undercutting** ☐ Location shown on site map ☐ No evidence of undercutting
Areal extent _____ Depth _____
Remarks _____
-
5. **Obstructions** Type _____ ☐ No obstructions
☐ Location shown on site map Areal extent _____
Size _____
Remarks _____
-
6. **Excessive Vegetative Growth** Type _____
☐ No evidence of excessive growth
☐ Vegetation in channels does not obstruct flow
☐ Location shown on site map Areal extent _____
Remarks _____
-
- D. Cover Penetrations** ☒ Applicable ☐ Not applicable
1. **Gas Vents** ☐ Active ☐ Passive ☐ Properly secured/locked ☐ Functioning
☐ Routinely sampled ☐ Good condition ☐ Needs O&M ☐ Evidence of leakage at penetration
☒ N/A
Remarks _____
-
2. **Gas Monitoring Probes** ☐ Properly secured/locked ☒ Functioning
☒ Routinely sampled ☒ Good condition ☐ Needs O&M ☐ Evidence of leakage at penetration
☐ N/A
Remarks GP-8 needs lock, check on easement agreement for access to wells off property.
-
3. **Monitoring Wells (within surface area of landfill)** ☒ Properly secured/locked
☒ Functioning ☒ Routinely sampled ☒ Good condition ☐ Needs O&M
☐ Evidence of leakage at penetration ☐ N/A
Remarks _____
-

4. **Leachate Extraction Wells** ☐ Properly secured/locked ☐ Functioning
☐ Routinely sampled ☐ Good condition ☐ Needs O&M
☐ Evidence of leakage at penetration ☒ N/A

Remarks _____

5. **Settlement Monuments** ☐ Located ☐ Routinely surveyed ☒ N/A

Remarks _____

E. **Gas Collection and Treatment** *Not applicable*

1. **Gas Treatment Facilities**

- ☐ Flaring ☐ Thermal destruction ☐ Collection for reuse
☐ Good condition ☐ Needs O&M

Remarks _____

2. **Gas Collection Wells, Manifolds and Piping**

- ☐ Good condition ☐ Needs O&M

Remarks _____

F. **Cover Drainage Layer** ☐ Applicable ☒ Not applicable

1. **Outlet Pipes Inspected** ☐ Functioning ☒ N/A

Remarks _____

2. **Outlet Rock Inspected** ☐ Functioning ☒ N/A

Remarks _____

G. **Detention/Sedimentation Ponds** ☒ Applicable ☐ Not applicable

1. **Siltation** Areal extent _____ Depth _____ ☐ N/A

☒ Siltation not evident

Remarks _____

2. **Erosion** Areal extent _____ Depth _____

☒ Erosion not evident

Remarks _____

3. **Outlet Works** ☐ Functioning ☒ N/A

Remarks _____

4. **Dam** ☐ Functioning ☒ N/A

Remarks _____

H. Retaining Walls ☐ Applicable ☒ Not applicable

1. **Deformations** ☐ Location shown on site map ☐ Deformation not evident

Horizontal displacement _____ Vertical displacement _____

Rotational displacement _____

Remarks _____

2. **Degradation** ☐ Location shown on site map ☐ Degradation not evident

Remarks _____

I. Perimeter Ditches/Off-Site Discharge ☒ Applicable ☐ Not applicable

1. **Siltation** ☐ Location shown on site map ☒ Siltation not evident

Areal extent _____ Depth _____

Remarks Clear vegetation from outlet to retention basin

2. **Vegetative Growth** ☐ Location shown on site map ☐ N/A

☒ Vegetation does not impede flow

Areal extent _____ Type _____

Remarks Two little trees are enroaching on perimeter ditch on west side – mowing is adequate

3. **Erosion** ☐ Location shown on site map ☒ Erosion not evident

Areal extent _____ Depth _____

Remarks _____

4. **Discharge Structure** ☐ Functioning ☒ N/A

Remarks _____

VII. VERTICAL BARRIER WALLS ☐ Applicable ☒ Not applicable

1. **Settlement** ☐ Location shown on site map ☐ Settlement not evident

Areal extent _____ Depth _____

Remarks _____

2. **Performance Monitoring** Type of monitoring _____

☐ Performance not monitored

Frequency _____ ☐ Evidence of breaching

Remarks _____

VIII. GROUNDWATER/SURFACE WATER REMEDIES ☒ Applicable ☐ Not applicable

- A. Groundwater Extraction Wells, Pumps, and Pipelines**

☒ Applicable ☐ Not applicable

1. **Pumps, Wellhead Plumbing, and Electrical**
☐ Good condition ☒ All required wells located ☐ Needs O&M ☐ N/A
Remarks The pumps have been pulled from recovery wells RW-1, RW-2, and RW-3 and the groundwater treatment system is currently not operational due to the MNA pilot study.
-
2. **Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
☒ Good condition ☐ Needs O&M
Remarks _____
-
- B. **Surface Water Collection Structures, Pumps, and Pipelines**
☒ Applicable ☐ Not applicable
1. **Collection Structures, Pumps, and Electrical**
☒ Good condition ☐ Needs O&M
Remarks _____
-
2. **Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
☒ Good condition ☐ Needs O&M
Remarks Perimeter ditches/Retention Basin
-
- C. **Treatment System** ☒ Applicable ☐ Not applicable
1. **Treatment Train (Check components that apply)**
☐ Metals removal ☐ Oil/water separation ☐ Bioremediation
☒ Air stripping ☐ Carbon adsorbers
☐ Filters _____ ☐ Others _____
☒ Good condition ☐ Needs O&M
☐ Sampling ports properly marked and functional
☐ Sampling/maintenance log displayed and up to date
☐ Equipment properly identified
☐ Quantity of groundwater treated annually System is currently shut down for MNA Pilot Study
☐ Quantity of surface water treated annually N/A
Remarks PLC (RemSys) needs O&M for long term operation
-
2. **Electrical Enclosures and Panels (properly rated and functional)** ☐ N/A
☒ Good condition ☐ Needs O&M
Remarks _____
-
3. **Tanks, Vaults, Storage Vessels** ☒ N/A
☐ Good condition ☐ Proper secondary containment ☐ Needs O&M
Remarks _____
-
4. **Discharge Structure and Appurtenances** ☐ N/A
☒ Good condition ☐ Needs O&M
Remarks _____

-
5. **Treatment Building(s)** ☒ N/A
☐ Good condition ☐ Needs repair
☐ Chemicals and equipment properly stored

Remarks _____

6. **Monitoring Wells (pump and treatment remedy)** ☒ Properly secured/locked
☐ Functioning ☒ Routinely sampled ☒ Good condition ☒ All required wells located
☐ Needs O&M ☐ N/A

Remarks _____

D. Monitored Natural Attenuation

1. **Monitoring Wells (natural attenuation remedy)** ☒ Properly secured/locked
☐ Functioning ☒ Routinely sampled
☒ Good condition ☒ All required wells located ☐ Needs O&M ☐ N/A

Remarks A MNA Pilot Study is currently being conducted to evaluate this remedial option.

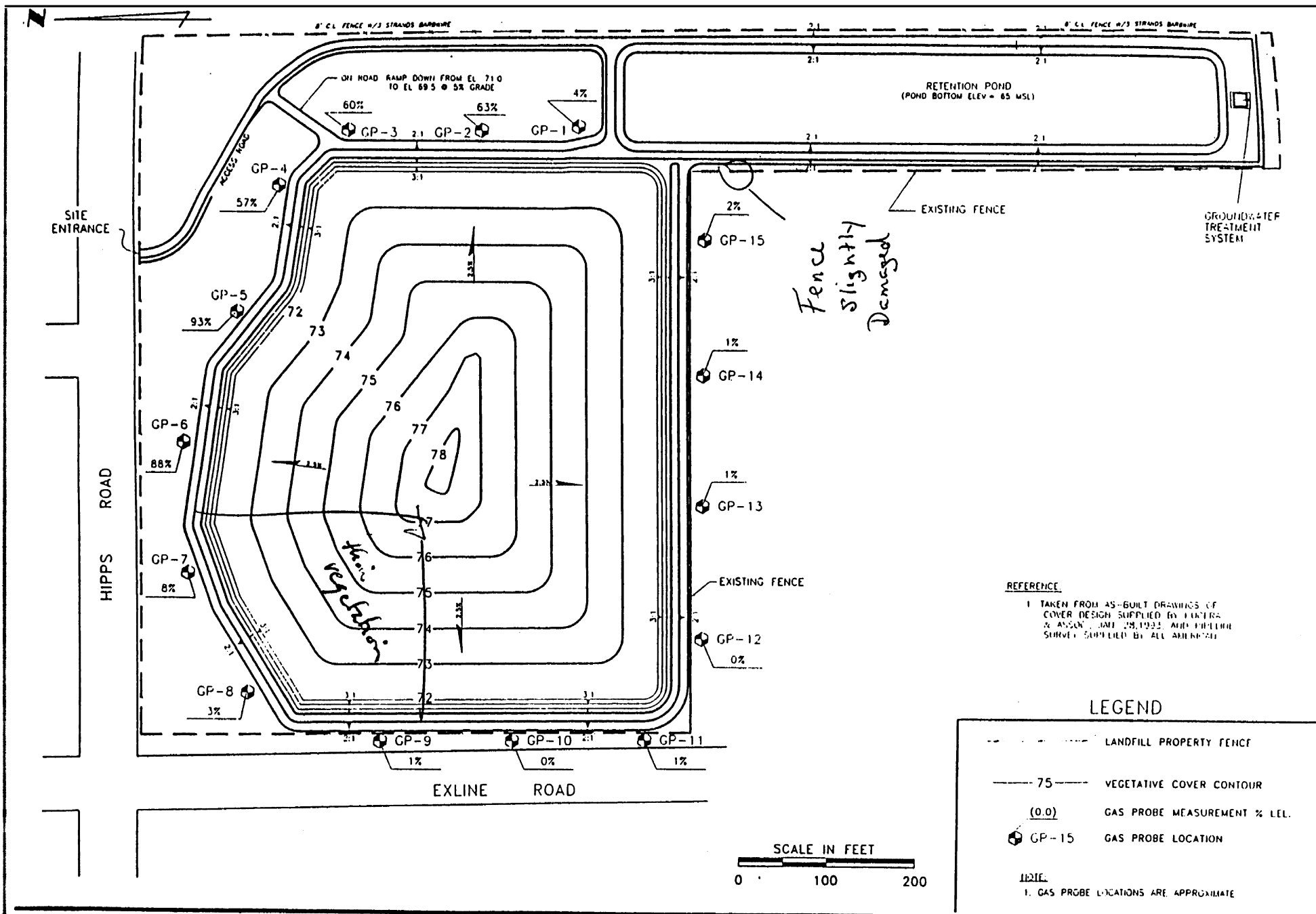
Hipps Road Landfill Site April 25, 2000 Site Inspection Team:

John Blanchard, P.E., Remedial Project Manager, USEPA Region IV

Theresa Stone, P.G., Project Manager, Waste Control of Florida

Jim Bedessem, P.E., Senior Engineer, ARCADIS Geraghty & Miller, Inc.

Kathy Thalman, P.G., Project Scientist I, ARCADIS Geraghty & Miller, Inc.



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HIPPS ROAD LANDFILL
HIPPS ROAD AND EXLINE ROAD
JACKSONVILLE, FLORIDA

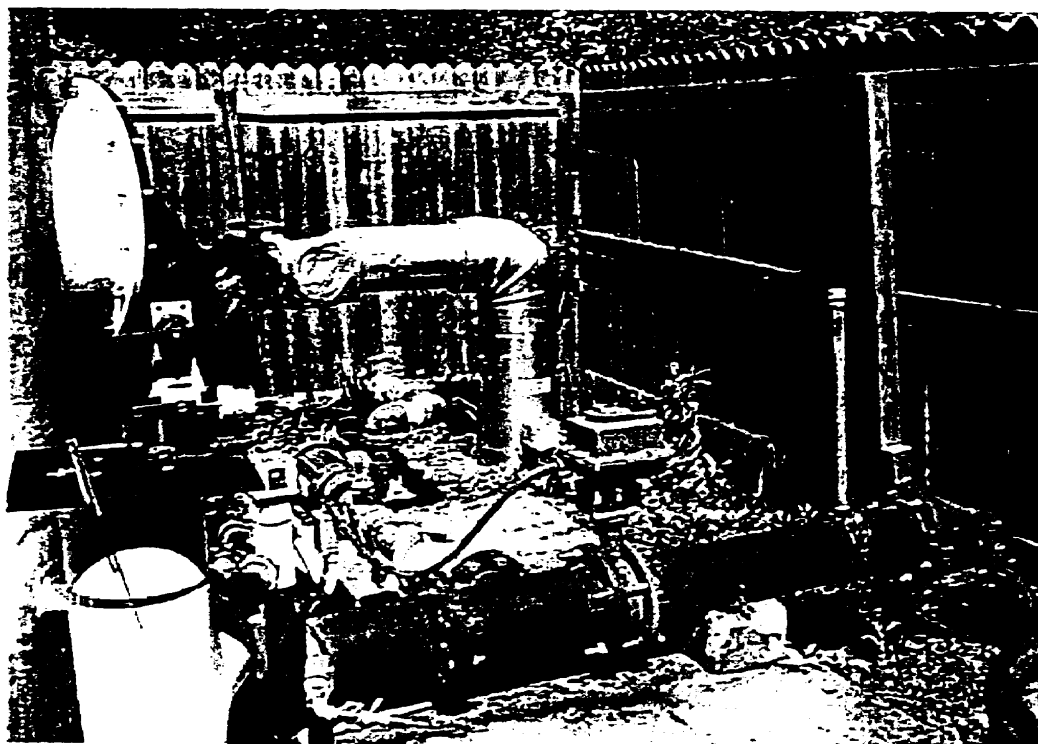
FIGURE 5
METHANE MONITORING
SURVEY
DECEMBER 18, 1997

Appendix C

Photos Documenting Site Conditions



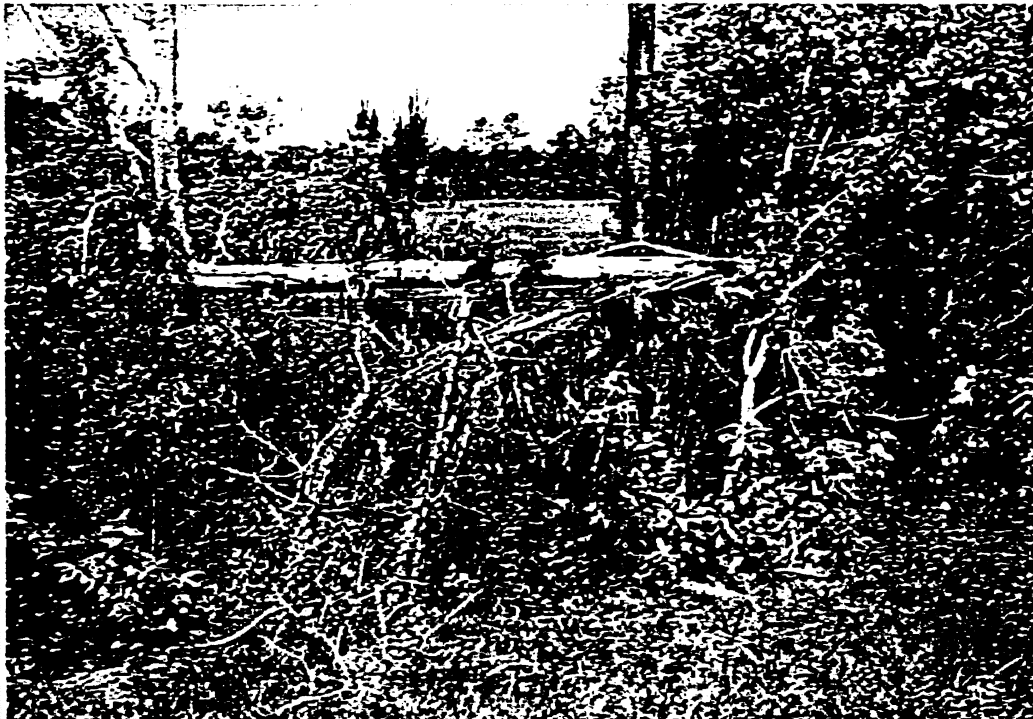
Photograph of dry retention pond taken from the northern edge of the pond. The pipe that discharges stormwater runoff from the landfill is located at the right of the photograph.



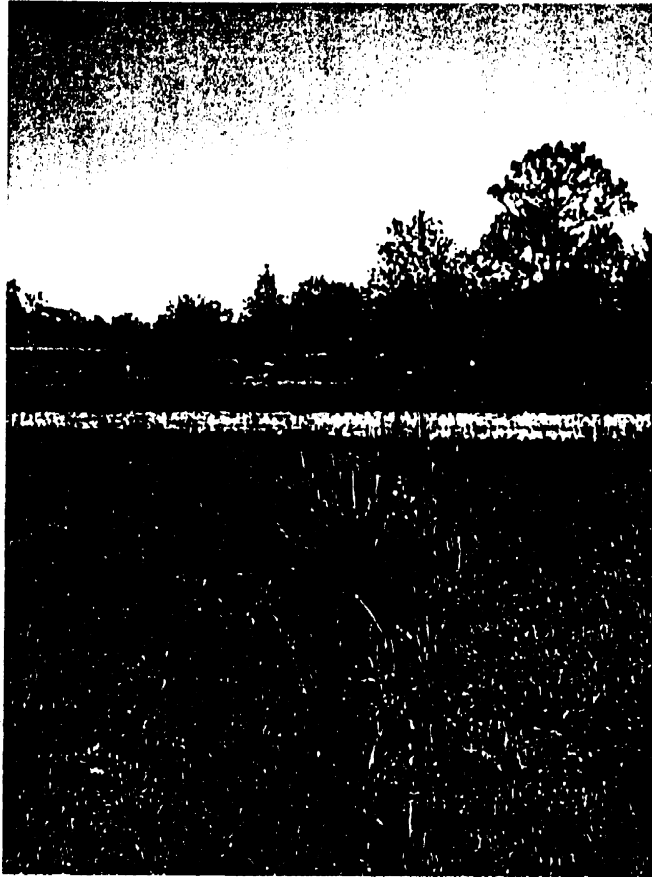
Photograph of groundwater treatment system showing POTW bypass.



Photograph of monitoring well TMW-1 couplet located at the southwest corner of the retention pond and site fence.



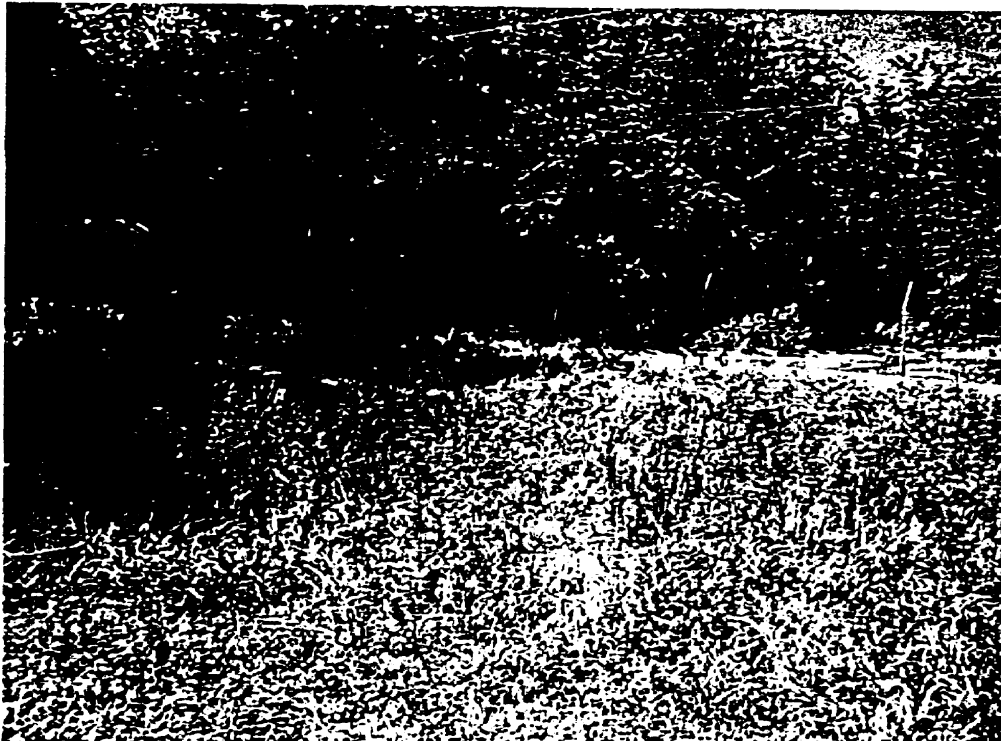
Photograph of fence at southeast corner of landfill that was slightly damaged by a tree.



Photograph of perimeter drainage ditch outflow pipe with front of it.



Photograph of perimeter ditch. The location is marked all grass in by taller grass.



Photograph of landfill berm on west side of landfill with two small trees growing in it.



Photograph of landfill cover, photograph taken looking east from west side of landfill.



Photograph of northwestern quadrant of the landfill where vegetation is sparse in some places.



Photograph of landfill berm on north of side of landfill along Hipps Road.

TMW-31

	Detection Limit µg/l	Sampling Date												
		5/22/89	4/23/92	5/24/94	9/22/94	12/22/94	3/21/95	6/28/95	9/27/95	12/28/95	3/22/96	6/28/96	9/25/96	12/27/96
Benzene	<1.0	7.9	7.1	9.3	12	12	12	9.7	6.2	5.9	5.3	4.2	3.0	1.6
Vinyl Chloride	<1.0	<10	3.6	3.6	3.8	2.9	2.9	2.7	2.4	4.7	2.9	2.9	1.9	1.1

For graphing and statistical purposes analytical results below the MDL are plotted as 1/2 the MDL.
The MCL for Benzene and Vinyl Chloride is 1.0 µg/l.

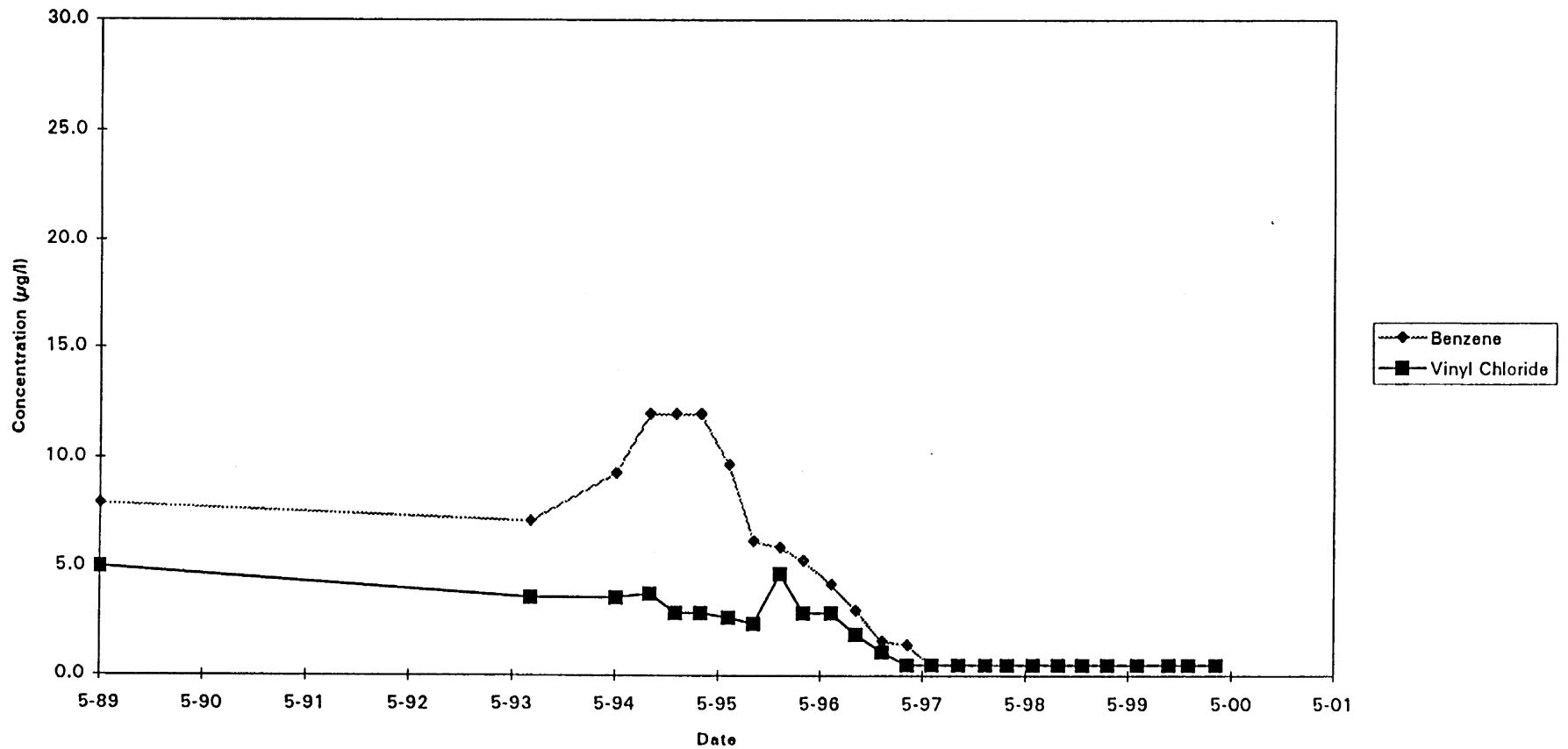
TMW-31

	Detection Limit µg/l	Sampling Date												
		3/27/97	6/23/97	9/25/97	12/30/97	3/18/98	6/17/98	9/15/98	12/10/98	3/9/99	6/23/99	10/12/99	12/21/99	3/29/00
Benzene	<1.0	1.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

For graphing and statistical purposes analytical results below the MDL are plotted as ½ the MDL.
The MCL for Benzene and Vinyl Chloride is 1.0 µg/l.

TMW-31

Benzene and Vinyl Chloride Concentrations



TMW-61

	Detection Limit µg/l	Sampling Date												
		05/25/89	04/23/94	05/24/94	09/22/94	12/22/94	03/21/95	06/28/95	09/27/95	12/28/95	03/22/96	06/28/96	09/25/96	12/27/96
Benzene	<1.0	<5.0	2.1	2.1	3.0	2.6	2.1	2.2	1.3	1.8	2.5	3.3	2.5	1.4
Vinyl Chloride	<1.0	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

For graphing and statistical purposes analytical results below the MDL are plotted as ½ the MDL.
The MCL for Benzene and Vinyl Chloride is 1.0 µg/l.

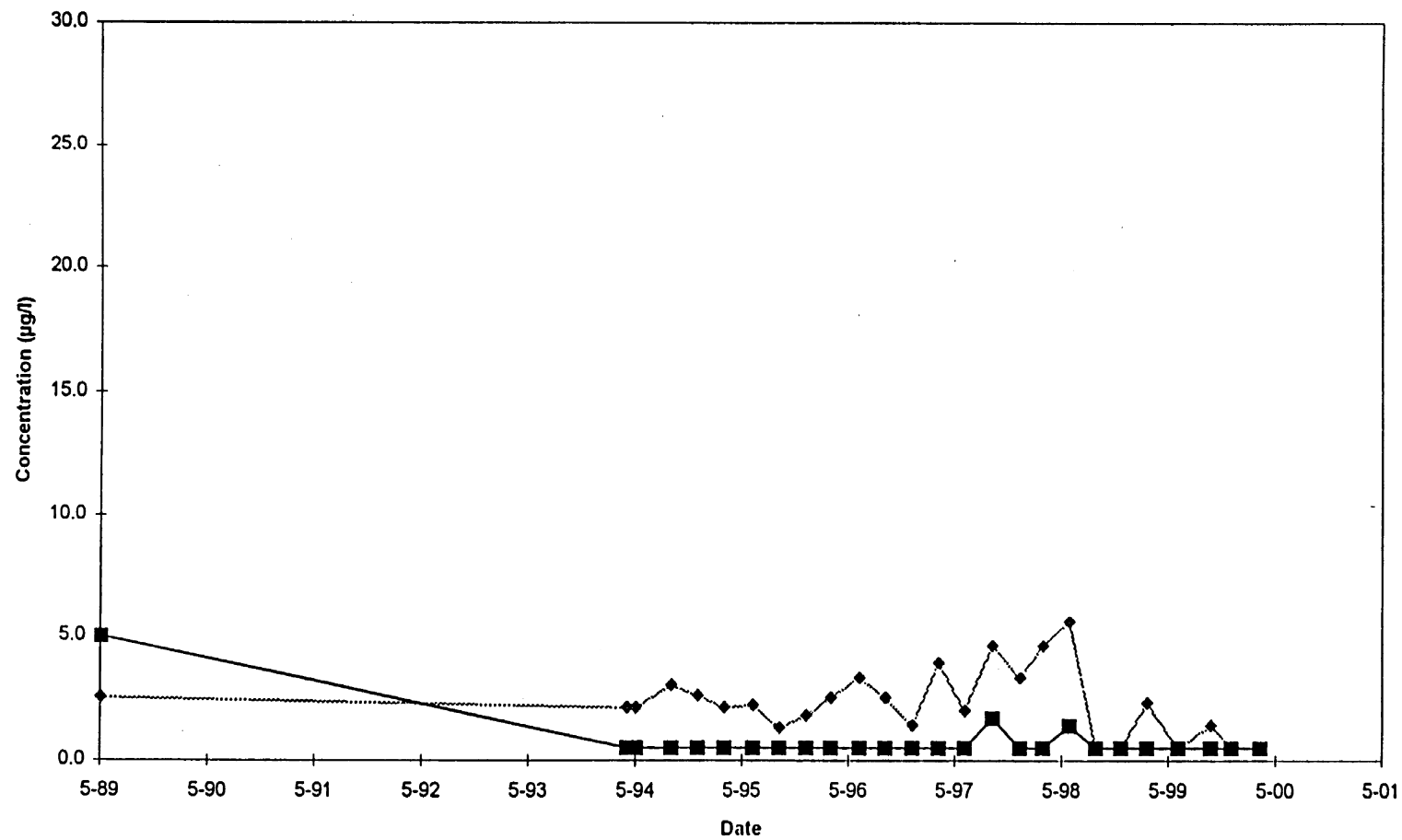
TMW-61

	Detection Limit µg/l	Sampling Date												
		3/27/97	6/23/97	9/25/97	12/30/97	03/18/98	06/17/98	09/15/98	12/10/98	03/09/99	06/23/99	10/12/99	12/21/99	03/29/00
Benzene	<1.0	3.9	2.0	4.6	3.3	4.6	5.6	3.0	<1.0	2.3	<1.0	1.4	<1.0	<1.0
Vinyl Chloride	<1.0	<1.0	<1.0	1.7	<1.0	<1.0	1.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

For graphing and statistical purposes analytical results below the MDL are plotted as ½ the MDL.
The MCL for Benzene and Vinyl Chloride is 1.0 µg/l.

TMW-6I

Benzene and Vinyl Chloride Concentrations



TMW-71

	Detection Limit µg/l	Sampling Date												
		5/25/89	4/23/92	5/24/94	9/27/94	12/22/94	03/21/95	06/28/95	09/27/95	12/28/95	03/22/96	06/28/96	09/25/96	12/27/96
Benzene	<1.0	7.9	7.7	6.2	6.5	4.8	5.6	6.8	5.3	7.3	8.6	12.0	15.0	12.0
Vinyl Chloride	<1.0	19.0	5.7	4.9	3.9	2.1	2.3	2.8	2.0	2.8	1.8	2.3	2.3	2.2

For graphing and statistical purposes analytical results below the MDL are plotted as ½ the MDL.
The MCL for Benzene and Vinyl Chloride is 1.0 µg/l.

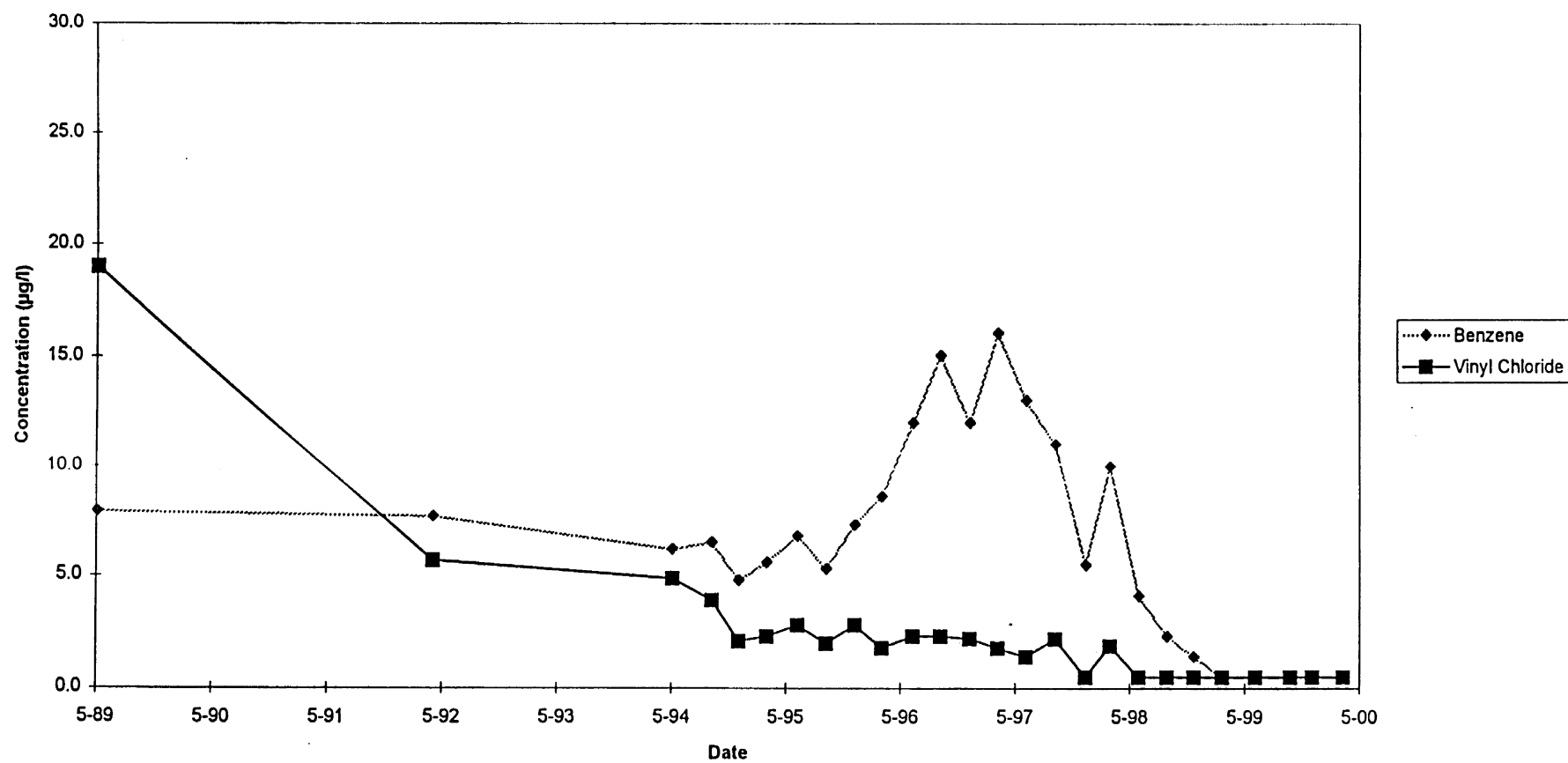
TMW-71

	Detection Limit µg/l	Sampling Date												
		03/27/97	06/23/97	09/25/97	12/30/97	03/18/98	06/17/98	09/15/98	12/10/98	03/09/99	06/23/99	10/12/99	12/21/99	03/29/00
Benzene	<1.0	16.0	13.0	11.0	5.5	10.0	4.1	2.3	1.4	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	<1.0	1.8	1.4	2.2	<1.0	1.9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

For graphing and statistical purposes analytical results below the MDL are plotted as ½ the MDL.
The MCL for Benzene and Vinyl Chloride is 1.0 µg/l.

TMW-71

Benzene and Vinyl Chloride Concentrations



TMW-8I

	Detection Limit µg/l	Sampling Date														
		05/23/89	05/23/89	04/10/90	04/23/92	05/24/94	09/22/94	12/22/94	03/21/95	06/28/95	09/27/95	12/28/95	03/22/96	6/28/96	09/25/96	12/27/96
Benzene	<1.0	<5.0	<5.0	<1.0	1.3	1.0	1.6	1.5	2.2	2.4	1.1	1.9	2.4	3.2	1.1	1.3
Vinyl Chloride	<1.0	<10	<10	1.3	<1.0	1.2	1.6	1.1	1.5	1.4	<1.0	1.1	<1.0	1.2	<1.0	<1.0

For graphing and statistical purposes analytical results below the MDL are plotted as ½ the MDL.
The MCL for Benzene and Vinyl Chloride is 1.0 µg/l.

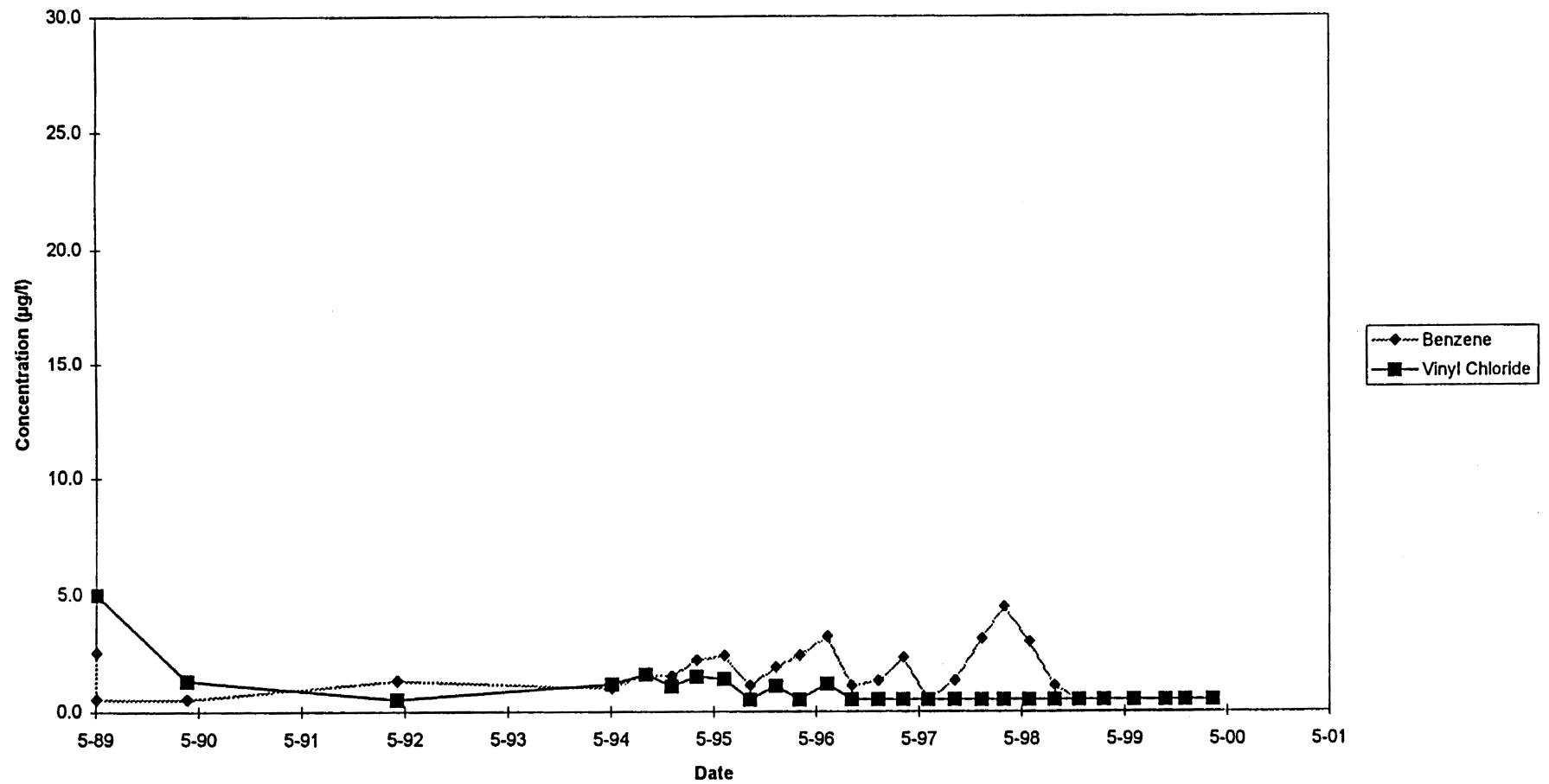
TMW-8I

	Detection Limit µg/l	Sampling Date												
		03/27/97	06/23/97	09/25/97	12/30/97	03/18/98	06/17/98	09/15/98	12/10/98	03/09/99	06/23/99	10/12/99	12/21/99	03/30/00
Benzene	<1.0	2.3	<1.0	1.3	3.1	4.5	3.0	1.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

For graphing and statistical purposes analytical results below the MDL are plotted as ½ the MDL.
The MCL for Benzene and Vinyl Chloride is 1.0 µg/l.

TMW-81

Benzene and Vinyl Chloride Concentrations



TMW-9I

	Detection Limit µg/l	Sampling Date												
		05/24/89	04/23/92	05/24/94	09/22/94	12/22/94	03/21/95	06/28/95	09/27/95	12/28/95	03/22/96	06/28/96	09/25/96	12/27/96
Benzene	<1.0	<5.0	2.7	3.3	5.9	5.9	5.8	6.7	4.2	4.4	5.0	4.4	4.7	3.5
Vinyl Chloride	<1.0	<10	6.0	8.0	15.0	12.0	11.0	15.0	10.0	11.0	7.7	7.9	8.8	7.5

For graphing and statistical purposes analytical results below the MDL are plotted as ½ the MDL.
The MCL for Benzene and Vinyl Chloride is 1.0 µg/l.

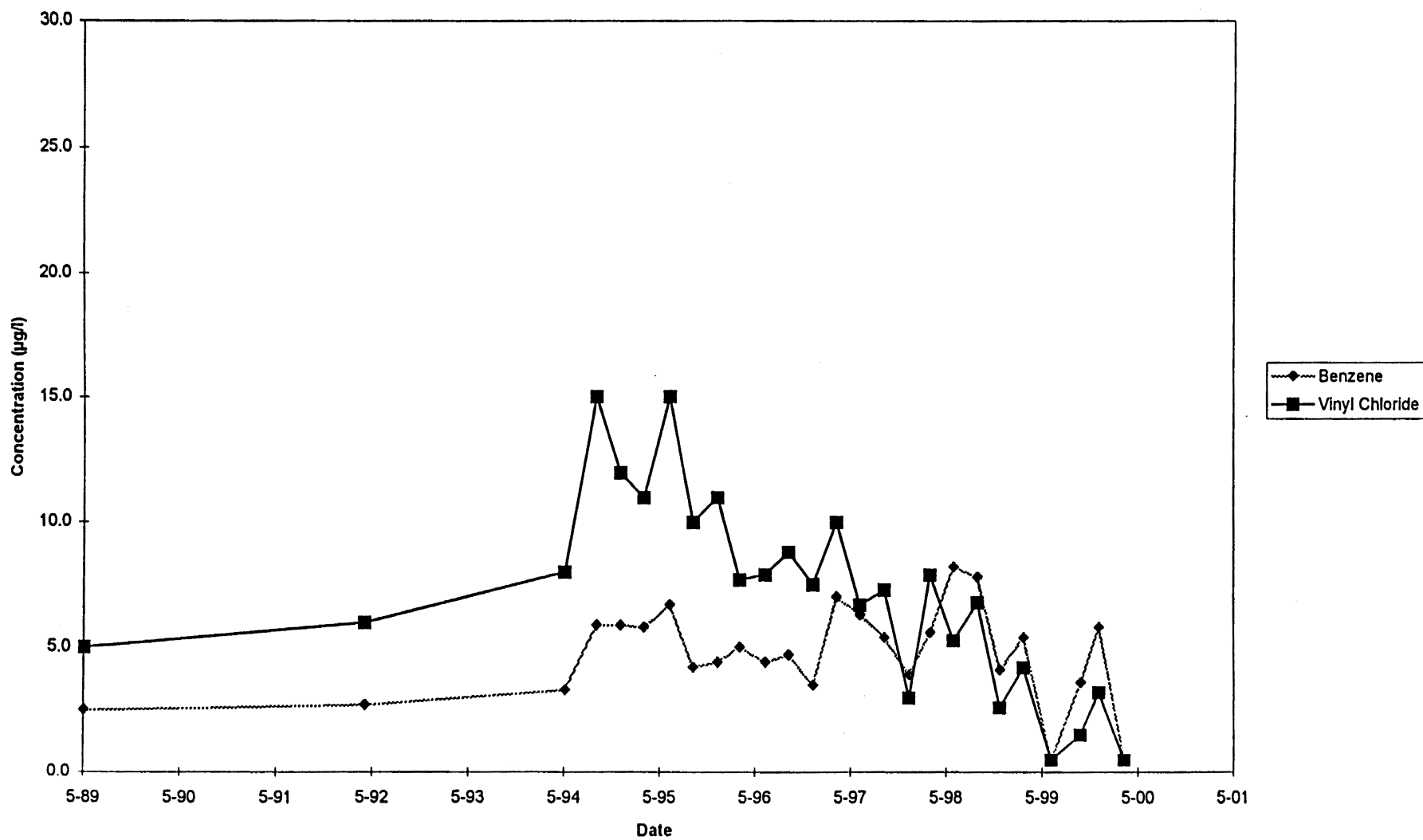
TMW-9I

	Detection Limit µg/l	Sampling Date												
		03/27/97	06/23/97	09/25/97	12/30/97	03/18/98	06/17/98	09/15/98	12/10/98	03/09/99	06/23/99	10/12/99	12/22/99	03/29/00
Benzene	<1.0	7.0	6.3	5.4	3.9	5.6	8.2	7.8	4.1	5.4	<1.0	3.6	5.8	<1.0
Vinyl Chloride	<1.0	10.0	6.7	7.3	3.0	7.9	5.3	6.8	2.6	4.2	<1.0	1.5	3.2	<1.0

For graphing and statistical purposes analytical results below the MDL are plotted as ½ the MDL.
The MCL for Benzene and Vinyl Chloride is 1.0 µg/l.

TMW-91

Benzene and Vinyl Chloride Concentrations



TMW-13I

	Detection Limit µg/l	Sampling Date											
		07/27/93	05/24/94	09/22/94	12/22/94	03/21/95	06/28/95	09/27/95	12/28/95	03/22/96	06/28/96	09/25/96	12/27/96
Benzene	<1.0	<1.0	<1.0	1.4	1.2	1.5	1.4	<1.0	1.3	1.6	1.3	1.2	1.3
Vinyl Chloride	<1.0	6.6	5.3	7.7	5.5	4.3	7.0	4.4	9.9	7.2	6.9	6.3	8.6

For graphing and statistical purposes analytical results below the MDL are plotted as ½ the MDL.
The MCL for Benzene and Vinyl Chloride is 1.0 µg/l.

TMW-13I

	Detection Limit µg/l	Sampling Date												
		03/27/97	06/23/97	09/25/97	12/30/97	03/18/98	06/17/98	09/15/98	12/10/98	03/09/99	06/23/99	10/12/99	12/22/99	03/30/00
Benzene	<1.0	1.8	<1.0	<1.0	<1.0	1.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	<1.0	12	4.4	4.4	1.3	<1.0	1.9	1.7	1.6	2.5	<1.0	1.5	2.7	<1.0

For graphing and statistical purposes analytical results below the MDL are plotted as ½ the MDL.
The MCL for Benzene and Vinyl Chloride is 1.0 µg/l.

TMW-13I

Benzene and Vinyl Chloride Concentrations

